Technology Deployment Program

Miles C. Dionisio

EM-50 Lead

November 29, 2001

Significant Accomplishments in FY2001

- Deployment of 7 innovative technologies for the characterization of the BGRR
  - Resulted in significant savings
  - Accelerated schedule
- BNL's documented report on Lessons Learned gained through FY00 deployment activities

Look Ahead Into FY2002

Needs Identified By PBS

(FY98 - Present)

- CH-BRNL-RA: 8
- CH-BRNL-DD: 2
- CH-BRNL-WO: 2
- CH-ANLE-RA: 6
- CH-ANLE-DD: 5
- CH-ANLE-WO: 5
- CH- AMES-WO: 1
- CH-PPPL-DD: 3

Needs Identified for PBS CH-BRNL-RA

Total Life Cycle Cost = $297.5M

- **Characterization and Sorting of Potentially Contaminated Hg Mixed Waste From Chemical Holes**
- **Remediation of Radiologically Contaminated Soil**
- **Non-Intrusive Remediation Technologies for the Peconic River**
- Remediation of Strontium-90 Contaminated GW
- Remediation of (VOCs) in GW
- Long-Term Groundwater Monitoring
- Vadose Contamination at BNL
- Detritiation of Water

Needs Identified for PBS CH-BRNL-DD

Total Life Cycle Cost = $68.9 M

- Characterization for Decontamination and Decommissioning of the BGRR
  1. MARSSIM ASTD
  2. BetaScint Fiber-Optic Sensor for Detecting Strontium-90 and Uranium-238 in Soil
  3. In Situ Object Counting System
  4. Compact Subsurface Investigation System
  5. Environmental Visualization System (EVS-PRO by C-Tech)
  6. Perfluorocarbon Tracers (PFTs)
  7. LandTrek
  8. Diamond Wire Cutter
- Cost Effective Decontamination of the BGRR

Low priority in FY02 due to funding reductions in D&D activities

Needs Identified for PBS CH-ANLE-RA

Total Life Cycle Cost = $37.6M

- New Tools for Long-Term Monitoring of Groundwater Quality and Groundwater Flow Conditions at ANL-E
- Continuation of Expanded Monitoring Activities for Tritium and VOC Fate @ the 317/319 Area @ ANL-E
- Demonstrate Effectiveness of Phytoremediation in the Removal of Tritium from GW
- In-situ Remediation of Petroleum Products in Low Permeability Soil
- Remote Decontamination of In-Ground Concrete Structures
- Remote Characterization of In-Ground Concrete Structures

Needs Identified for PBS CH-ANLE-DD

Total Life Cycle Cost = $35.6

- Decontamination of Twenty-Seven Fuel Storage Tubes in Bldg. 301
- Decontamination of Fixed Surface Contamination of Concrete (Thin Layer Removal)
- Lead Removal, Segregation and Disposal
- Improved Worker Protection Equipment
- Size Reduction of Massive Metal Metal Structures

Low priority in FY02 due to funding reductions in D&D activities

Needs Identified for PBS CH-ANLE-PM

(temporary holding place)

- Treatment of Reactive Metals Contaminated with TRU
- Methods to Remotely Separate and Dispose of Potentially Activated Lead Shielding and Concrete Anchors from CP-5 Reactor Facility at ANL-E
- Treatment of UF6 in Gas Cylinder
- Treatment of TRU Organic Liquids Waste

FY02 ASTD Proposal Submission

- "Innovative Waste Segregation And Near Real-Time Field Characterization For RCRA Metals In Stockpiled Soil"
  - Total Requested EM-50 funding is $1.0M
  - Matching funds to be provided by BNL-EM is $2.5M
  - Cost Reduction is $3.2 million for the first year, and a
  - Total life cycle cost savings of about $12M

Detail of FY02 ASTD Proposal

- Three Needs Under PBS CH-BRNL-RA addressed by this ASTD
  - Treatment of Hg Mixed Waste from Chemical Holes (CH-MW01-99A: Chemical Holes)
  - Remediation of Radiologically Contaminated Soil (CH-SS03-99A: HWMF)
  - Non-Intrusive Remediation Technologies for the Peconic River (CH-SS05-01: Peconic River)

1st Deployment Site: Chem Holes

- Approximately 7000 yd^3 of stockpiled soil removed from the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remediation of BNL Chemical Holes is currently awaiting characterization and shipment off-site for treatment and/or disposal.

2nd Deployment Site: HWMF

- Concentrations of radionuclides in the HWMF are considered to present a future human health risk if unremediated. Another area of concern is the Building 650 Sump and Outfall areas. These areas are primarily contaminated with cesium-137.
- Similar concerns exist with several areas at BNL where top soil from the HWMF was removed and inadvertently used as landscaping material.

3rd Deployment Site: Peconic River

- Sediments are contaminated with mercury, heavy metals, and cesium-137. Technologies that would minimize disturbance of the wetlands and ecosystem are needed.

Potential Deployments in FY02

- CH-BRNL-RA:
  - Powerscreen Vibratory Screening
  - X-Ray Fluorescence
  - Direct Mercury Analyzer
  - Anodic Stripping Voltammeter

Reporting Issues

- A PBS # for orphan needs
  - Treatment of Reactive Metals Contaminated with TRU
  - Methods to Remotely Separate and Dispose of Potentially Activated Lead Shielding and Concrete Anchors from CP-5 Reactor Facility at ANL-E
  - Treatment of UF6 in Gas Cylinder
  - Treatment of TRU Organic Liquids

Reporting Issues

- A PBS# for deployments outside of EM (e.g., TFTR D&D Project)
  - Lead TechXtract Chemical Decontamination
  - Diamond Wire Cutting of the Tokomak Fusion Test Reactor Vacuum Vessel
  - Mega Tech Hydraulic Shears

Key Events Next Fiscal Year

- ANL-E Site Clean-Up completion expected in FY2003
  - Long Term Stewardship Needs may not be totally addressed yet.